

WHAT IS CLAIMED:

1. A solid golf ball comprising:

a dual core including an inner, high density, spherical center core layer and an outer core layer disposed about said spherical center core layer, wherein said spherical center core layer has a specific gravity from about 4.0 to about 20.0, a diameter of about 0.200 inches to about 0.830 inches, and a Shore C hardness of 95 or less and comprises a blend including a powdered metal and a first matrix material comprising a thermoset elastomeric base material, and wherein said outer core layer has a specific gravity of less than 1.2, a diameter of from about 1.25 to 1.60 inches, and comprises a second matrix material selected from the group consisting of thermosets, thermoplastics, and combinations thereof;

an inner cover layer formed about said dual core having a thickness of about 0.010 inches to about 0.055 inches wherein said inner cover layer has a Shore D hardness of 58 or more; and

an outer cover layer disposed on said inner cover layer having a thickness of about 0.010 inches to about 0.055 inches, wherein said outer cover layer has a Shore D hardness less than the Shore D hardness of the inner cover layer.

2. A golf ball according to claim 1, wherein the difference in Shore D hardnesses between the inner cover and the outer cover is 8 or more.

5 3. A golf ball according to claim 1, wherein said outer cover layer has a Shore D hardness of 50 or less.

4. A golf ball according to claim 1, wherein the difference in Shore D hardnesses between the inner cover and the outer cover is 11 or more.

10 5. A golf ball according to claim 1, wherein said outer cover layer has a Shore D hardness of 47 or less.

6. A golf ball according to claim 1, wherein at least one of said cover layers has
15 a thickness of 0.040 inches or less.
7. A golf ball according to claim 1, wherein at least one of said cover layers has
a thickness of 0.035 inches or less.
- 20 8. A golf ball according to claim 1, wherein said dual core has a specific gravity
of about 1.10 to about 1.18.
9. A golf ball according to claim 1, wherein the spherical center core layer has a
Shore D hardness of from 50 to 95.
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10. A golf ball according to claim 1, wherein the spherical center core layer has a
Shore C hardness of about 80.
11. A golf ball according to claim 1, wherein the specific gravity of the spherical
30 center core layer differs from that of the outer core layer by more than 2.0.
12. A golf ball according to claim 1, wherein the Shore C hardness of the inner
core layer is less than the Shore C hardness of the outer core layer.
- 35 13. A golf ball according to claim 1, wherein said golf ball exhibits a moment of
inertia of less than 0.43 oz.in².
14. A solid golf ball comprising:
a dual core including an inner, high density, spherical center and outer core
40 layer disposed about said spherical center, wherein said spherical center has a
specific gravity of 2.0 or more, and a Shore C hardness of 50 to 95, and comprises a
blend including a powdered metal and a first matrix material comprising a thermoset
elastomeric base material and wherein said outer core layer comprises a second
matrix material selected from the group consisting of thermosets, thermoplastics,

45 and combinations thereof, wherein said outer core layer has a specific gravity of from about 0.09 to about 1.2 and a diameter of from about 1.47 to 1.595 inches;

an inner cover layer formed about said dual core having a thickness of about 0.020 inches to about 0.050 inches and a Shore D hardness of 68 or more; and

50 an outer cover layer disposed on said inner cover layer having a thickness of about 0.020 to about 0.050 inches and a Shore D hardness of 50 or less.

15. A golf ball according to claim 14, wherein at least one of the cover layers comprises an ionomer resin, a polyurethane, or blends thereof.

16. A golf ball according to claim 14, wherein said inner cover layer comprises at least in part an ionomer resin having an acid content greater than 16 weight percent.

17. A golf ball according to claim 14, wherein said powdered metal comprises tungsten powder.

18. A golf ball according to claim 14, wherein said second matrix material of said outer core layer is selected from the group consisting of a polybutadiene, a polyisoprene, an ionomer resin, or combinations thereof.

19. A golf ball according to claim 14, wherein said spherical center has a diameter of from about 0.200 inches to about 0.830 inches.

20. A golf ball according to claim 14, wherein said spherical center has a diameter of about 0.200 inches to about 0.600 inches.

21. A golf ball according to claim 14, wherein said powdered metal is dispersed throughout said first matrix material of said spherical center.

22. A golf ball according to claim 14, wherein the difference between the specific gravity of said spherical center and said outer core layer is greater than 2.0.

23. A golf ball according to claim 14, wherein the spherical center core layer is lower in Shore C hardness than the outer core layer.
24. A golf ball according to claim 14, wherein said inner cover is an ionomer resin and said outer cover is a thermoplastic polyurethane
25. A golf ball according to claim 14, wherein said spherical center exhibits a specific gravity of 2.0 to 18.0.
26. A golf ball according to claim 14, wherein said powdered metal constitutes at least 50% by weight of said spherical center.
27. A golf ball according to claim 14, wherein said powdered metal is selected from the group consisting of tungsten powder and iron powder and combinations thereof.
28. A solid, non-wound, golf ball comprising:
 - a dual core including an inner, high density, spherical center core layer and an outer core layer disposed about said spherical center core layer, wherein said spherical center core layer has a specific gravity greater than 1.2 and a diameter of about 0.200 inches to about 0.830 inches and a diameter of from about 1.25 to 1.60 inches;
 - an inner ionomer cover layer formed about said dual core having a thickness of less than 0.045 inches and a Shore D hardness of 68 or more; and
 - an outer ionomer cover layer disposed on said inner cover layer having a thickness of less than 0.045 inches and a Shore D hardness of 50 or less.
29. A golf ball according to claim 28, wherein the difference in Shore D hardnesses between the inner cover and the outer cover is 8 or more.
30. A golf ball according to claim 28, wherein at least one of said cover layers has a thickness of 0.040 inches or less.

31. A golf ball according to claim 28, wherein at least one of said cover layers has a thickness of 0.035 inches or less.
32. A golf ball according to claim 28, wherein said dual core has a specific gravity of about 1.10 to about 1.18.
33. A golf ball according to claim 28, wherein the spherical center core layer has a Shore D hardness of from 50 to 95.
34. A golf ball according to claim 28, wherein the specific gravity of the spherical center core layer differs from that of the outer core layer by more than 2.0.
35. A golf ball according to claim 28, wherein the Shore C hardness of the inner core layer is less than the Shore C hardness of the outer core layer.
36. A golf ball according to claim 28, wherein said golf ball exhibits a moment of inertia of less than 0.43 oz.in².